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Government Size vs. Government Efficiency in a Model of Economic Growth

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Motivation

- Vast literature linking income distribution with:
  - Policy Choices (Philip Keefer and Stuti Khemani)
  - Education (Gerhard Gloom and B. Ravikumar)
  - Economic Performance (Simons Kuznets)
  - Growth (Roberto Perotti)
- Empirical and Theoretical literature on:
  - Link between public investment/public capital and economic growth (David Alan Aschauer)

Motivation

- Try to bridge the two branches of literature:
  - There is a documented negative impact of income distribution on growth (Alberto Alesina and Dani Rodrik)
  - Can governments, through public investment, mitigate this negative impact?
- There is some empirically evidence of a relation between income distribution, government quality and government size

The model

- Framework of an exogenous growth model
- Government
  - $H_t = \theta \tau K_{pt}$ → Ht stands for government spending
  - $\dot{K}_{gt} + \delta_g K_{gt} = (1 - \theta)\tau K_{pt}$ → K_{gt} is public capital
  - $q_t = (K_{gt} / L_t)^{\psi}$ → qt stands for government quality
- Production
  - $Yt = AK^{\alpha}_{pt} L_t^{1-\alpha} (H_t q_t)^{\beta}$

The model

- Consumer side of the problem:
  - Each individual is indexed by a relative factor endowment:

$$\sigma^i = \frac{L_t^i}{\left(k_{pt}^i / k_{pt} \right)}$$

High σ: individual is capital poor; Low σ individual is capital rich. In a equalitarian society σ =1. In the real world σ^m>1.

  - Individual income:

$$y_t^i = w(\tau,\theta) k_{pt}^{\alpha+\beta} k_{gt}^{\psi\beta} L_{it} + \left[r(\tau,\theta) k_{pt}^{\alpha+\beta-1} k_{gt}^{\psi\beta} - \tau \right] k_{pt}^i$$

  - The utility function is given by:

$$\log c_t^i$$

Decentralized problem

- Consumers solve the following problem:

$$\underset{s.t.:}{Max} U^i = \int e^{-\rho t} \log c^i dt$$

$$\dot{k}_p^i = y_t^i - c^i$$

Decentralized problem

- Solving the previous problem, in a balanced growth path with constant returns to scale on private and public capital we will have:

$$\frac{\dot{k}_p^i}{k_{pt}^i} = \frac{\dot{k}_p}{k_{pt}} = \frac{\dot{c}^i}{c_t^i} = \frac{\dot{k}_g}{k_{gt}} = A\alpha(\theta\tau)^{\beta}\pi - \tau - \rho$$

- The tax rate that maximizes growth

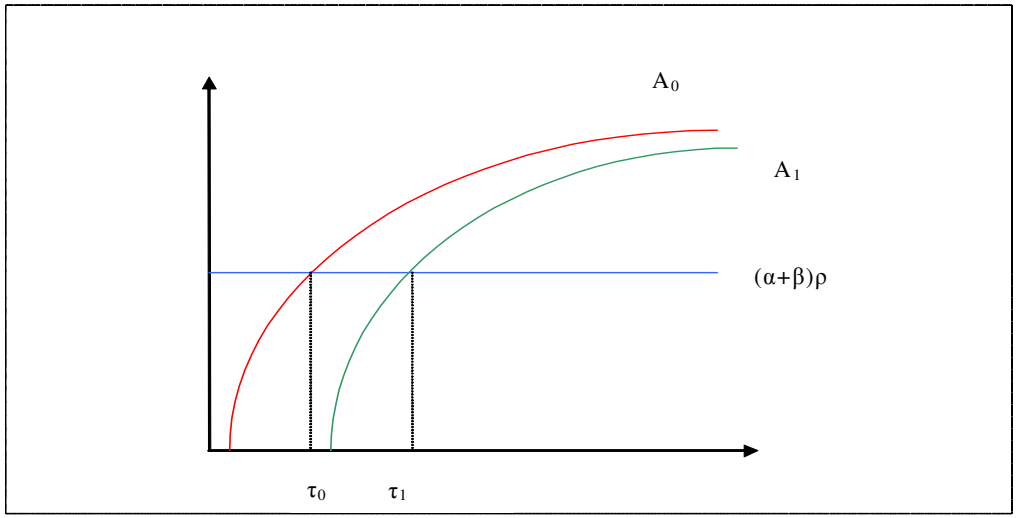
$$\tau^* = \left[A\alpha\beta\theta^{\beta}\pi\right]^{\frac{1}{1-\beta}}$$

Individual *i* preferred tax rate

$$\frac{\left(\tau_i^{1-\beta} - A\alpha\beta\theta^{\beta}\pi\right)\rho}{A(1-\alpha)\beta\theta^{\beta}\pi\sigma^{i}} + \tau_i^{\beta}\left(\tau_i^{1-\beta} - A\alpha\beta\theta^{\beta}\pi\right)\frac{\alpha+\beta}{\beta} +$$

$$+(1-\alpha-\beta)\tau_i^{\beta}\left(\tau_i^{1-\beta} - A\alpha\beta\theta^{\beta}\pi\right) = (\alpha+\beta)\rho$$

Individual *i* preferred tax rate



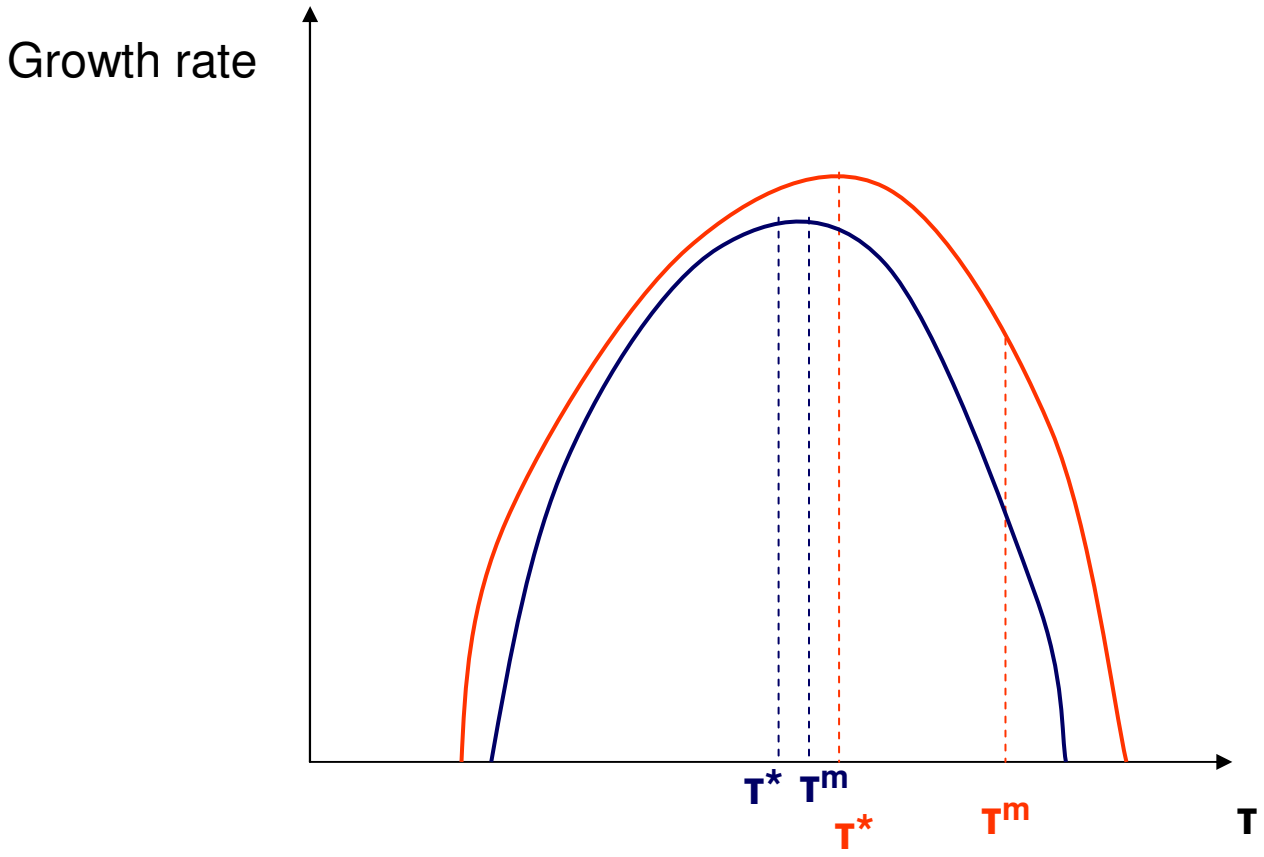
Proposition: The less capitalist an individual is the higher will is preferred tax rate be.

Proposition: The lower the government saving rate is the higher will be individual i preferred tax rate.

Policy choice

- We have a *Condorcet* winner that is the median voter tax rate
- This tax rate will be higher than the optimal one
- Can government chose its own saving rate in order to diminish this distance?

Choices of θ



Conclusions

- The economy's growth rate has an inverted U-shape relation with the tax rate
- Each individual has only one tax rate that maximizes it's utility. The more capital poor an individual is the higher will is preferred tax rate be.
- There is a condorcet winner which is the tax rate chosen by the median voter

Conclusions

- The more unequal a society is, the bigger the distance between the chosen tax rate and the optimal one
- With the manipulation of θ governments can reduce this distance and approximate the actual growth rate from the potential one
- This manipulation has to take in consideration that lowering θ has a negative impact on potential growth.

Conclusions

- We have also concluded that the positive relation between θ and τ is sensitive to the parameters of the model. Larger tax rates will be obtain if:
  - We have more weight of the public sector on the production function
  - We have a more uneven society
  - We have a larger discount rate

Further Work

- Try to find the exact level of θ that allows the choice of the tax rate that maximizes growth
- Confirm empirically if this results have effective correspondence to reality